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10/565,998	01/27/2006	Renaut Mosdale	285343US0PCT	9546
22850	7590	01/09/2009		
OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314				
EXAMINER				
MILLER, DANIEL H				
ART UNIT		PAPER NUMBER		
1794				
NOTIFICATION DATE		DELIVERY MODE		
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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# Office Action Summary

**Application No.**

10/565,998

**Applicant(s)**

MOSDALE ET AL.

**Examiner**

DANIEL MILLER

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 06 October 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 16-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 16-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SG/US)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION*****Double Patenting***

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims 16-23 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-22 of U.S. Patent No. 7,384,663. Although the conflicting claims are not identical, they are not patentably distinct from each other because they claim a substantially similar process of forming a densified group of carbon nanotubes on a carbon fiber matrix with little or no structural or processing differences other than some small insubstantial difference in wording.

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 17-19, 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cariou (US 4,396,669) in view of Knowles et al (US 7,132,161) and Smalley (US 6,683,783), and further in view of Baughman (US 6,555,945).
3. Cariou teaches a carbon felt composed of carbon fibers and a layer of (glassy) vitreous carbon bonded to at least one surface (claim 1 ref.). The invention of Cariou provides one porous layer (carbon fibers) and one gas impervious side (vitreous carbon) that can be used for electrodes (such as fuel cells; column 1 line 7-12). A sandwich structure can be produced consisting of alternating layers of carbon fibers and vitreous carbon (column 1 line 30-35 and figures). The carbon fibers extend partially into the glassy carbon (claim1 reference).
4. The vitreous carbon layer is inherently bonded via a carbon-carbon bond to the carbon fiber layer because both are carbon bonded using a carbonized resin (see examples).

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5. Knowles teaches polyacrylonitrile carbon fiber arrays (matrix) wherein seed catalysts material (being nickel, cobalt or Iron) can be deposited at the base and/or tips of the fibers in order to grow carbon nanotubes. The nanotubes can be grown using a CVD process using an acetylene source gas.

6. Smalley (US 6,683,783) teaches it is known in the art to grow carbon nanotubes from metal salts including salts of nickel, cobalt, and Iron; specifically nitrates of those metals (see columns 10 and 27 Smalley).

7. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the method the claimed method of applicant's by using substantially similar production method of for providing the polyacrylonitrile (carbon) fibers of Knowles using the seed catalyst taught by Knowles and Smalley in order to produce a porous high surface area carbon electrode ideal for fuel cells and other electrical applications.

8. Cariou (US 4,396,669) in view of Knowles et al (US 7,132,161) and Smalley are silent as to the method of making the polyacrylonitrile fibers.

9. Baughman (US 6,555,945) teaches it is known to provide a method of spinning polyacrylonitrile fibers followed by oxidation, and then pyrolysis of the fibers to provide high surface area fibers for electrode applications (see column 16 lines 17-40).

10. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide polyacrylonitrile fibers made by the method of Bauman in order to provide a high surface area fiber useful in electrode applications such as Cariou and Baughman. No patentable distinction is seen.

11. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cariou (US 4,396,669) in view of Knowles et al (US 7,132,161) and Smalley (US 6,683,783), and further in view of Baughman (US 6,555,945), and still further in view of Sohda et al (US 5,433,937).

12. The previously above cited references are silent as to the method of needle punching the composite fibers.

13. Sohda et al (US 5,433,937) teaches it is known in the art to produce carbon composites comprising carbon fibers using a needle punch technique (column 3 line 15-25), as claimed in claim 16.

14. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide a stronger and denser carbon composite as provided and known in the art as demonstrated by Sohda. No patentable distinction is seen.

15. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cariou (US 4,396,669) in view of Knowles et al (US 7,132,161) and Smalley (US 6,683,783), and further in view of Baughman (US 6,555,945), and still further in view of Okamoto et al (US 5,202,293).

16. The previously above cited references are silent as to the method of using carbon pitch grown fibers.

17. Okamoto et al (US 5,202,293) teaches it is known to produce carbon fibers by spinning pitch (see examples and claims 1-4). The carbon fiber reinforced carbon body is produced having high strength

18. It would have been obvious to one of ordinary skill in the art at the time of the invention to substitute the pitch spun fibers of Okamoto for the fibers of Cariou and/or nanotubes of Knowles and Smalley in order to provide a stronger carbon composite as provided by Okamoto and known in the art. No patentable distinction is seen.

### ***Response to Arguments***

19. Applicant's arguments with respect to claims 16-23 have been considered but are moot in view of the new ground(s) of rejection.

20. The 112 rejection has been withdrawn due to applicant's amendments to claims.

### ***Conclusion***

21. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DANIEL MILLER whose telephone number is (571)272-1534. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Keith Hendricks can be reached on (571)272-1401. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Daniel Miller

/KEITH D. HENDRICKS/

Supervisory Patent Examiner, Art Unit 1794